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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,622	02/22/2002	Dairi Kubo	219734US3PCT	7769
22850	7590	02/03/2004	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			ENGLISH, PETER C	
			ART UNIT	PAPER NUMBER
			3616	

DATE MAILED: 02/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/049,622	Applicant(s) KUBO ET AL. SW	
	Examiner Peter C. English	Art Unit 3616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Oath/Declaration

1. The substitute declaration filed on 04 December 2003 is acceptable.

Drawings

2. The corrected drawing sheet filed on 04 December 2003 is acceptable.

Specification

3. The specification is objected to because:

At line 2 of the paragraph beginning at page 4, line 10, "side walls" should be "a side wall".

At line 4 of the paragraph beginning at page 4, line 10, "a bottom and sides" should be "an end and a side wall".

At line 2 of the paragraph beginning at page 7, line 8, "outer surfaces of the sides" should be "an outer surface of the side wall".

At line 3 of the paragraph beginning at page 7, line 8, "inner surfaces of the sides" should be "an inner surface of the side wall".

At line 2 of the paragraph beginning at page 7, line 14, "outer surfaces of the sides" should be "outer surface of the side wall".

At line 2 of the paragraph beginning at page 7, line 14, "inner surfaces of the sides" should be "inner surface of the side wall".

At line 3 of the paragraph beginning at page 9, line 16, "outer surfaces of the sides" should be "outer surface of the side wall".

At line 4 of the paragraph beginning at page 9, line 16, "inner surfaces of the sides" should be "inner surface of the side wall".

At line 2 of the paragraph beginning at page 10, line 19, "a bottom and sides" should be "an end and a side wall".

At line 1 of the paragraph beginning at page 10, line 23, "A bottom" should be "An end".

At line 4 of the paragraph beginning at page 10, line 23, "a bottom" should be "an end".

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At line 7 of the paragraph beginning at page 11, line 6, “a bottom and sides” should be “an end and a side wall”.

At line 6 of the paragraph beginning at page 12, line 7, “outer surfaces of the sides” should be “outer surface of the side wall”.

At lines 6-7 of the paragraph beginning at page 12, line 7, “inner surfaces of the sides” should be “inner surface of the side wall”.

At lines 3 and 6 of the paragraph beginning at page 12, line 20, “bottom” should be “end”.

At lines 2 and 4 of the paragraph beginning at page 13, line 24, “bottom” should be “end”.

At lines 5 and 8 of the paragraph beginning at page 15, line 4, “bottom” should be “end”.

At line 2 of the paragraph beginning at page 16, line 1, “bottom” should be “end”.

Appropriate correction is required.

Claim Objections

4. Claims 6-16 are objected to because of the following informalities:

In claim 6, at line 3, “a” should be inserted before “side”.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. Claims 6-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 6, at lines 5-6, the recitation “with a bottom and sides” does not accurately describe the hollow body 4a. The planar portion of the body 4a is not necessarily a “bottom” (i.e., lowermost) portion. Further, the cylindrical portion of the body 4a does not have plural “sides”. The examiner suggests: at lines 5-6, change “a bottom and sides” to “an end and a side wall”.

In claims 8 and 9, at line 2, and in claim 12, at line 3, the term “the full volume” lacks proper antecedent basis. Note that the word “full” was deleted in claim 6, at line 9.

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In claims 15 and 16, at line 2, the term “preferably” renders the claim indefinite because it is unclear whether the limitation following the phrase is part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 6-9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider (US 4,890,860). Schneider discloses a gas generator comprising: a first hollow body (see Fig. 1) with an end 14 and a side wall 12; gas generants 74 filled densely in the first hollow body 12; a second hollow body (see Fig. 1) with an end 20 and a side wall 18; igniting agents 52 and an initiator 42 housed in the second hollow body; a plug 34 closing the second hollow body; a holder 28 fixed to the side wall 12 of the first hollow body, the holder 28 holding the plug 34 and positioning the side wall 18 of the second hollow body in a center of the first hollow body (see Fig. 1); and spacers 78 inserted between the outer surface of the side wall 18 of the second hollow body and the inner surface of the side wall 12 of the first hollow body. Schneider discloses that it is desirable to reduce the empty space in the gas generator so that the size of the gas generator can be minimized (see column 4, lines 41-50). Further, Schneider discloses a

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volumetric loading density of 65-80% (see column 5, lines 17-25; column 6, lines 16-20), i.e., an empty space ratio of 20-35%. The gas generants 74 are granulated (see column 4, lines 51-56). The generants 74 are "hard" and "pressed into wafers" (see column 5, lines 26-27), i.e., the generants are in a compressed state and are hard to compress.

Schneiter fails to teach an empty space ratio of less than 20%. Given Schneiter's teaching that it is desirable to reduce the empty space in the gas generator so that the size of the gas generator can be minimized (see column 4, lines 41-50), it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Schneiter by providing the gas generator with an empty space ratio of less than 20% in order to further reduce the size of the gas generator. Further, such a modification involving a minor change in value (e.g., reducing the empty space ratio from 20% to 19%) is generally considered to be well within the level of ordinary skill in the art.

9. Claims 6, 7, 10, 11, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Avory et al. (US 5,648,634) in view of Nilsson et al. (US 4,734,265) and Schneiter (US 4,890,860). As shown in Fig. 13, Avory et al. discloses a gas generator comprising: a first hollow body 1010 with an end and a side wall; gas generants 305 filled densely in the first hollow body 1010; an electric ignitor having a second hollow body 160 with an end and a side wall, igniting agents 170 in the second hollow body, and a plug 100 closing the second hollow body 160; and a holder 1090 positioning the second hollow body 160 in a center of the first hollow body 1010 and fixed to the first hollow body while holding the plug 100. The gas generants 305 surround the second hollow body 160, i.e., a concavity is formed in the gas generants 305 that receives the second hollow body 160.

Avory et al. fails to teach compressing the gas generants in order to reduce the empty space ratio to less than 20% (or 10% or 5%). Nilsson et al. teaches a gas generant powder 54 that is compressed within a first hollow body 10 (see column 4, lines 3-12). As described in detail above, Schneiter teaches reducing an empty space ratio to 20-35% in order to minimize the size of the gas generator. From these teachings of Nilsson et al. and Schneiter, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Avory et al. by compressing the gas generants in order to reduce the empty space ratio to 20-35% because this allows the size of the gas generator to be minimized. Additionally, given

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the teachings of Nilsson et al. and Scheiter to compress the gas generant and minimize the space occupied by the gas generant, it would have been obvious to provide the gas generator of Avory et al. with an empty space ratio of less than 20% (or 10% or 5%) in order to further reduce the size of the gas generator. Further, such a modification involving merely a change in value (e.g., reducing the empty space ratio from 20% to 19% or 14% or 9%) is generally considered to be well within the level of ordinary skill in the art.

Response to Arguments

10. Applicant's arguments filed on 04 December 2003 have been fully considered but they are not persuasive. Applicant argues that Schneider's gas generants 74 are not "filled densely" in the hollow body 12. The argument fails because the hollow body 12 is "filled" with the gas generants 74, and the density of the gas generants is relatively large, i.e., the volumetric loading density is 65-80% (see column 5, lines 17-25; column 6, lines 16-20). Further, "densely" is a relative term, which is easily met by Schneider's disclosure of a volumetric loading density of 65-80%.

Applicant argues that, since the lowest volume ratio disclosed by Schneider is 20%, it would not have been obvious to reduce the volume ratio below 20%. This argument fails because the person of ordinary skill is presumed to have a desire to improve upon the prior art. Since Schneider teaches that it is desirable to reduce the volume ratio to as low as possible, one of ordinary skill in the art would have been motivated to reduce the volume ratio below 20%. Further, a volume ratio of 19.99% cannot be considered to be patentable, given Schneider's teaching of 20%. To come to such a conclusion would require one to ignore the "ordinary skill" level stipulated in 35 USC 103.

Further, with respect to the combination of Avory et al., Nilsson et al. and Schneider, Avory et al. teaches a gas generant that is "filled densely" (see Fig. 13, which shows no voids). Further, Nilsson et al. teaches compressing the gas generants, which compression necessarily increases the density of the gas generant. These teachings of Avory et al. and Nilsson et al., coupled with the teachings of Schneider discussed above, would have led one of ordinary skill to provide a gas generator with a volume ratio below 20%.

Allowable Subject Matter

11. Claims 13 and 14 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion


12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter C. English whose telephone number is 703-308-1377. The examiner can normally be reached on Monday through Thursday (7:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul N. Dickson can be reached on 703-308-2089. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.


Peter C. English 2/2/04
Primary Examiner
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